Rahul Duggal

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EDUCATION

Georgia Institute of Technology, College of Computing **2018 – Present**
- Ph.D. in Computer Science (GPA : 4.0/4.0)

University of Delhi, Netaji Subhas Institute of Technology, India **2011 – 2015**
- Bachelors (B.E.) in Computer Engineering (GPA : 3.5/4.0)

WORKING PAPERS

[1] R Duggal, H. Zhou, J. Fang, S. Yang, Y. Xiong, W. Xia, **"Towards Regression-Free Neural Networks for Diverse Compute Platform"**, *Under review*.

SELECTED PUBLICATIONS

[9] R Duggal, H. Zhou, S. Yang, Y. Xiong, W. Xia, Z. Tu, S. Soatto **"Compatibility-aware Heterogeneous Visual Search"**, IEEE Computer Vision and Pattern Recognition (**CVPR**), USA, 2021. [Paper]

[8] R Duggal, S. Freitas, S. Dhamnani, P. Chau, J. Sun, **"HAR: Hardness Aware Reweighting for Imbalanced Datasets"**, IEEE International Conference on Big Data (**BigData**), USA, 2021. , [paper]

[7] R Duggal, C Xiao, R. Vuduc, P. Chau, J. Sun, **"CUP: Cluster Pruning for Compressing Deep Neural Networks"** , IEEE International Conference on Big Data (**BigData**), USA, 2021. [[paper]]

[6] H Park, N. Das, R Duggal, A. Wright, O.Shaikh, F. Hohman, P. Chau **"NeuroCartography: Scalable Automatic Visual Summarization of Concepts in Deep Neural Networks"** , IEEE Transactions on Visualization and Computer Graphics (**TVCG**), **IF: 4.5**) 2021, [Paper]

[5] R Duggal*, S. Freitas*, C. Xiao, D.H. Chau, J. Sun, **"REST: Robust and Efficient Neural Networks for Sleep Staging in the Wild"**, The World Wide Web Conference (**WWW**), Taiwan, 2020. [Paper][Code] (* denotes equal contribution)

[4] A. Gupta, R Duggal, S.Gehlot, R. Gupta, A. Mangal, L. Kumar, N. Thakkar, D. Satpathy **"GCTI-SN: geometry-inspired chemical and tissue invariant stain normalization of microscopic medical images"**, Medical Image Analysis (**IF: 11.1**) 2020. [Paper]

[3] A Gupta, P. Mallick, O.Sharma, R. Gupta, R Duggal **"PCSeg: Color model driven probabilistic multiphase level set based tool for plasma cell segmentation in multiple myeloma"**, PLos one (**IF: 3.24**) 2018. [Paper]

[2] R Duggal, A Gupta, et al, **"SD-Layer: Stain Deconvolutional layer for CNNs in Medical Microscopic Imaging"**, 20^{th} International Conference on Medical Image Computing and Computer Assisted Intervention (**MICCAI**), Canada, 2017. [Paper][Code]

[1] R Duggal, A Gupta, **"P-TELU: Parametric Tan Hyperbolic Linear Unit Activation for Deep Neural Networks"**, International Conference on Computer Vision (**ICCV**) Workshops, 2017 [Paper]

GRADUATE COURSEWORK

Math foundations for Machine Learning, Deep Learning, Convex Optimization, Advance Computer Vision, Natural Language Processing, Graduate Algorithms

PROFESSIONAL EXPERIENCE

Research Intern, *Amazon AI (AWS-AI Computer Vision)* **May 2021 – Aug 2021**
- Worked in the area of neural architecture search.

Research Intern, *Amazon AI (AWS Rekognition)* **May 2020 – Nov 2020**
- Developed a novel neural architecture search method for open set, visual search applications such as fashion retreival and face recognition.
- Project published in CVPR 2021.

Graduate Research Assistant, *Georgia Tech* **Aug 2018 – Present**

- Advised by Prof. Polo Chau at Georgia Tech [Lab Page]

Software Developer, *Epic Systems*, Madison, WI, USA **Oct 2017 – Jun 2018**

- Developed software for scheduling and documenting surgery time procedures.

Research Assistant, SBILab at IIIT-Delhi, India [Lab Page] **Jan 2016 – Sep 2017**

- Developed a software tool to diagnose Leukemia from medical images.
- Developed Deep Learning based methods leading to publications at top conferences.

Summer Intern, Samsung Research India **Jun 2014 – Jul 2014**

- Developed a prototype power saving application for Samsung's new flagship OS - Tizen.

SERVICE

Teaching Assistantship

- Graduate Deep Learning (CS 7643) with Prof. Zsolt Kira (Spring 2020, Spring 2021)

Reviewer / Sub-Reviewer

- CVPR 2021, 2022
- ICCV 2021
- KDD 2020, 2021
- ICLR 2019
- ICML 2019

PRESS

- [Amazon Science, ZDNet] "Graceful AI"
- [Georgia Tech, TechXplore, AIhub] "Machine Learning Technique Helps Wearable Devices Get Better at Diagnosing Sleep Disorders and Quality"

TALKS

- Regression Constrained Neural Architecture Search, *Amazon AI, CV* (Aug '21)
- Compatibility-aware Visual Search, *Amazon AWS Rekognition* (Nov '20)

AWARDS

- Selected to attend the **Summer School on Deep Learning** at IIIT Hyderabad. **Secured 1st position (overall)** among 150 attendees wherein all participants were ranked in 5 daily challenges. Reward entailed a travel grant to CVPR 2018 and a cash prize. **2017**
- Awarded the **Indian Association for Research in Computer Science** (ACM-IARCS) travel award to present my paper at MICCAI 2017, Quebec City, Canada. **2017**
- Ranked 217 all India for **ACM ICPC** Regionals. **2014**
- **All India Engineering Entrance Exam** - Top 0.2 percent among 1.2 million candidates.
- **IIT Joint Entrance Exam** - Top 0.9 percent among 0.5 million candidates.
- Won a team Gold and an individual Bronze medal (among 77 teams from 11 countries) at the 4th International Young Mathematician's Convention (**IYMC**). **2008**
- **National Cyber Olympiad** - All India Rank 128 (qualified for the 2nd stage). **2008**

SKILLS

Deep Learning Libraries : Pytorch (fluent), Mxnet (fluent), Tensorflow (Basic), Caffe (basic), Theano (basic).
Web Platforms : MeteorJS (fluent), Node (basic).
Version Management : Git (fluent)
Datastructures & Algorithms
Was active on several sport programming platforms through my handle jonvonneumann.

- Codeforces : Peak Rating 1682, **title - Expert**.
- Codechef : 131 problems solved, **peak global rank 307**.
- Ranked 186 and 168 worldwide, in google APAC rounds A and B. Invited to interview onsite at Google. **2014**